

Solarize Frederick County

Solar Water Heating
Solarize 201



Rick Peters
Solar Energy Services, Inc.



Agenda

- **Solar Energy Services (SES) – Who we are**
- **Solar Water Heating – how it works**
- **SWH History – Mature technology**
- **Site Requirements – install photos**
- **SWH vs. PV – applications, economics**
- **Discussion, Q&A**



Solar Energy Services, Inc

- **Maryland based with Mid Atlantic Focus**
- **Partners Maryland natives**
- **Founder has 35 Years of Solar Experience**
- **21 Employees**
- **Installer/Designer /Servicer of Solar
SPH, SWH, SSH, PV for:**
 - **Residential**
 - **Commercial**
 - **Institutional**
- **Distributor of Solar Thermal Products**
- **Lead with Solar Water Heating**
- **Residential and Commercial**



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Our Industry Advocacy

- MDV-SEIA Board member (2011 to present)
- President of MDV-SEIA (2013 to present)
- 2011 Succeeded in passing SWH legislation in MD
- SWH Evangelist
- Actively service SWH systems throughout region – many installed by others

What is Solar Thermal

- Solar Water Heating
- Solar Pool Heating
- Solar Space Heating
- Solar Cooling
- Concentrating Solar Power (Utility Scale)

Why Consider It?

- Mature Technology
- Durable and Low Maintenance
- Low Hanging Fruit
- 40-60% Efficient
- 16% of US Solar Market and growing

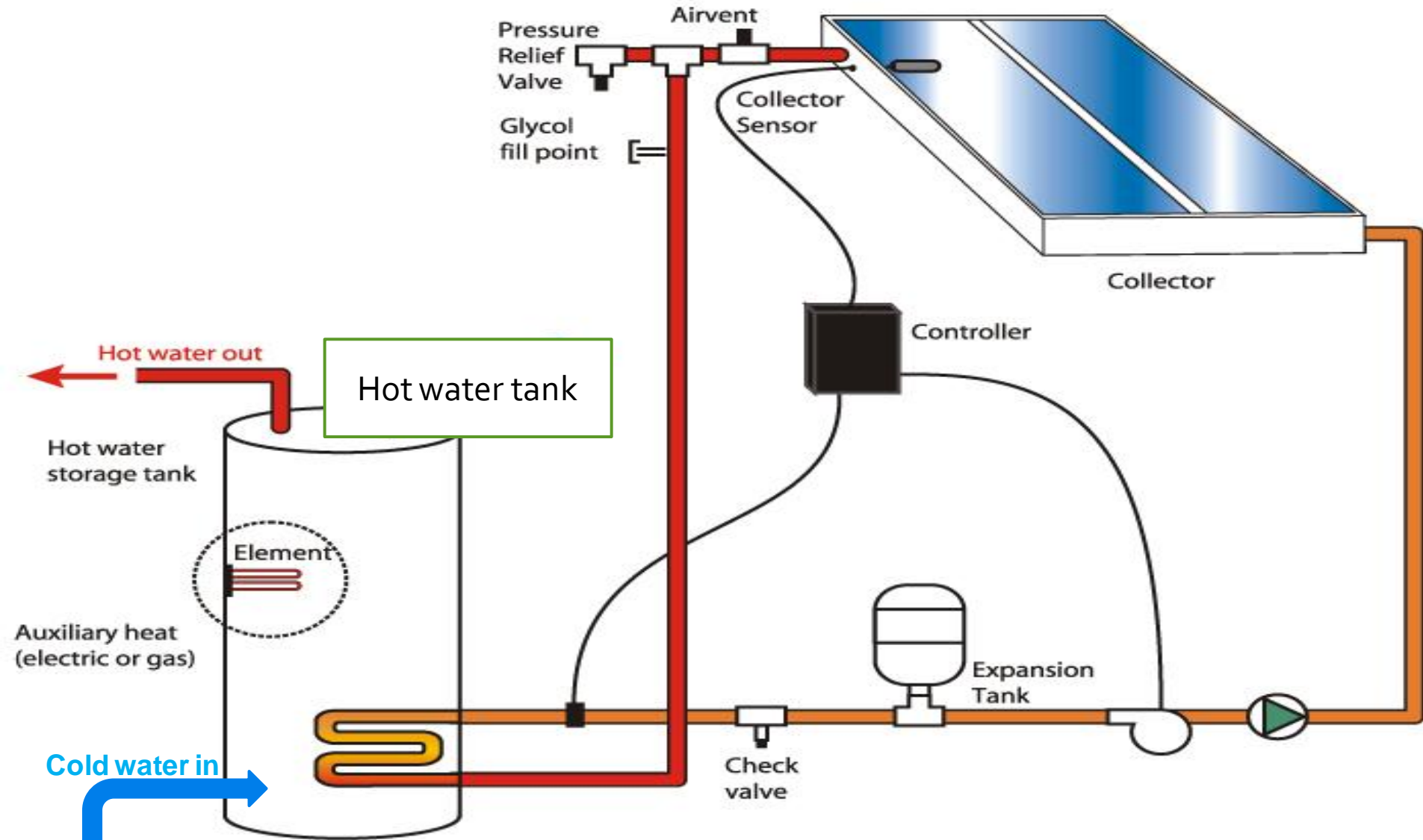


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Closed Loop, Freeze-Protection System



Dual Tank System – Natural Gas



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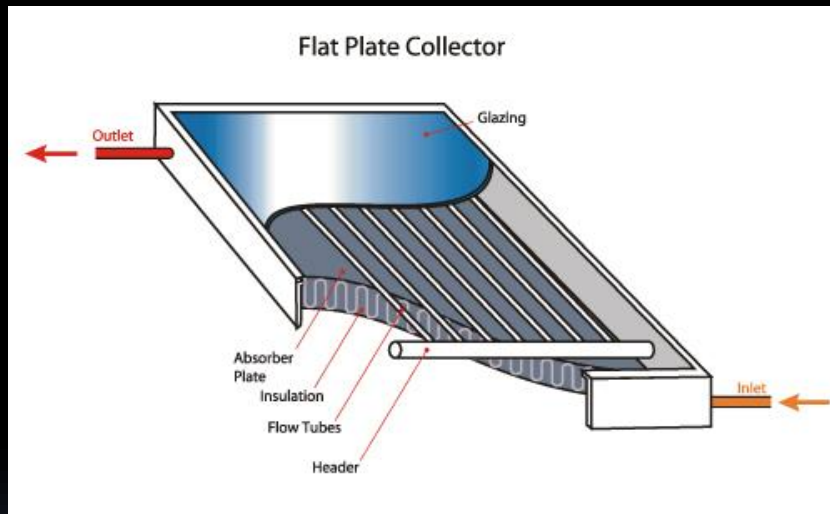
Single Tank System - Typical



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Flat Plate Collectors



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Origins and History of SWH

- Civilizations heating water with solar for thousands of years
- Advances in So Europe/ N. Africa/ and SE US in early 1800s
- First patent on residential water heater : Baltimore – 1891
- Boom and bust multiple times since then – displaced by cheap energy
- Used extensively throughout the world:

2008 – 70% of systems were in China
17% of systems in Europe
< ½ % in USA

- Required on new construction in Hawaii, Israel, Spain, US Gov't, etc.

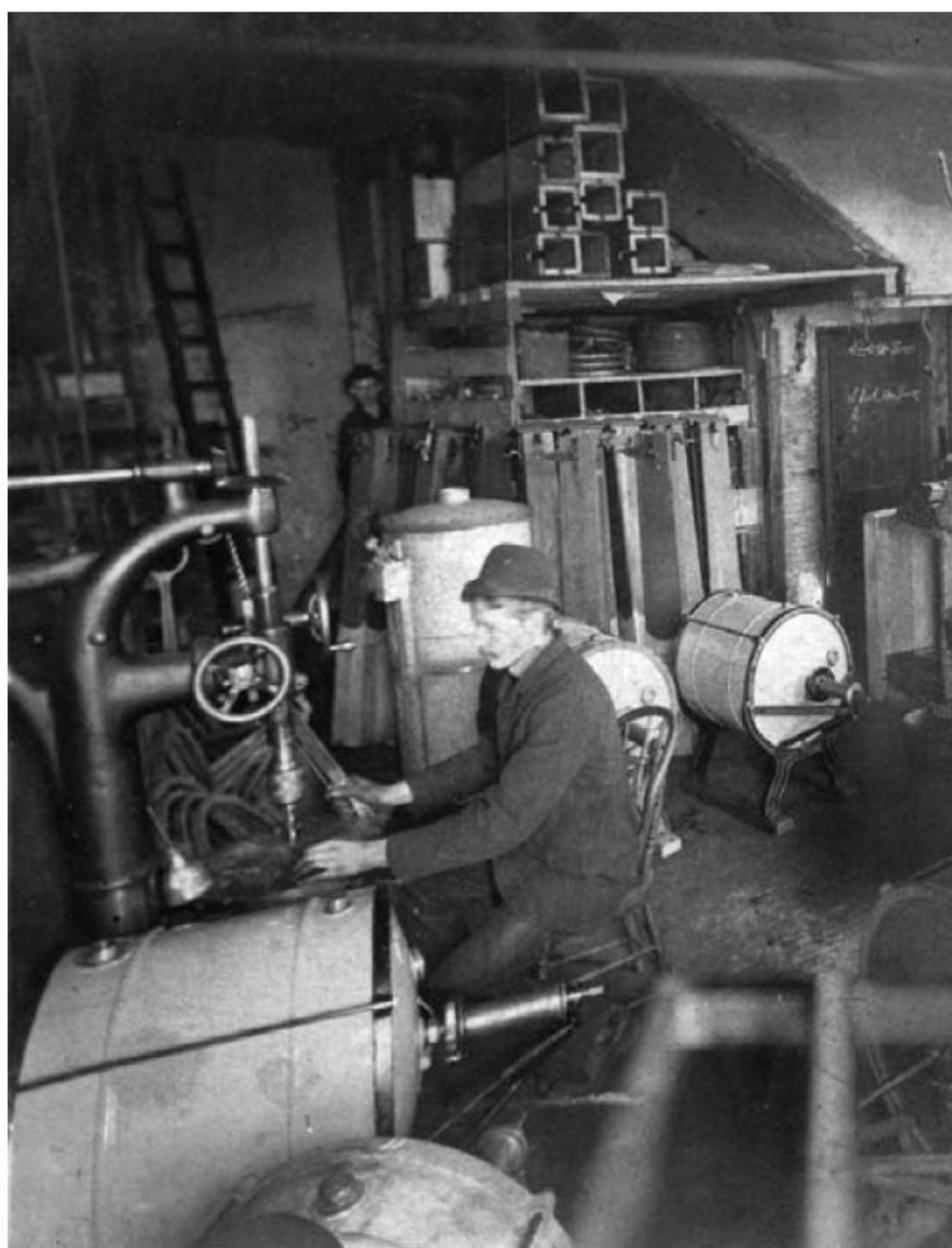


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Right: Interior view of Kemp's factory in Baltimore, Maryland.

Below: Clarence M. Kemp, inventor of the Climax solar water heater, patented in 1891.



Solar Water Heating Applications

- **Residential**
 - Multifamily Housing
 - Hotels
 - Dormitories/Barracks
 - Gymnasiums/Schools
 - Restaurants/Dining Halls
 - Carwashes
 - Laundromats
 - Processing Industries
 - Health Clubs



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Residential SHW Requirements

- Roof Space with 4-5 hours of sun
- Preferably South, but E or W too
- Hot water demand – 3 person residential
- Space Heating evaluated case by case
- Nice Combo is SH, SHW and Pool
- Electric, Oil, Propane best paybacks
- Natural gas – need more occupants



Household Members	Electric	Oil*	Propane	Natural Gas
2	Consider	Consider	Consider	No
3	Consider	Yes	Consider	No
4	Yes	Yes	Yes	No
5	Yes	Yes	Yes	Consider
6	Yes	Yes	Yes	Consider
>6	Yes	Yes	Yes	Yes

*If boiler runs in summer time for hot water, this is a great solar water heating application

Residential Project Photos



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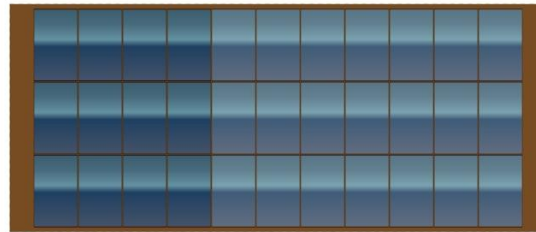


Maryland Governor's Mansion

3 Sample Systems

See Handout

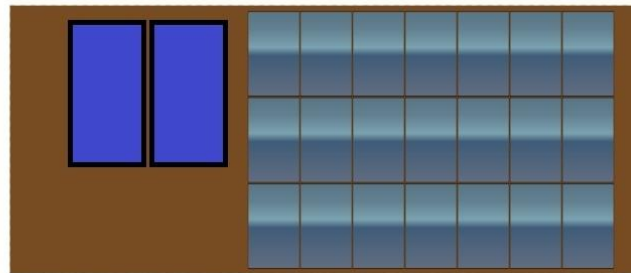
8.25 kW PV only 33 panels (entire roof covered)



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5.25 kW: 4 people (21 panels + SHW)



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6.75 kW: 4 people, roof covered (24 panels + SHW)



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Thank You

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or call 410.923.6090
www.solarsaves.net

